Exercise 8. Which of the following equations are correct?

(a) $\sum_{k=20}^{70}(k^2+1) = 51 + \sum_{k=20}^{70} k^2$ TRUE

k	20	21	22 ...	70
u_k	401	442	485	4901
$51 + v_2$	400	441	484	4900

(b) $\sum_{j=1}^{100} j^2 = 1 + \sum_{j=2}^{100} j^2$ T $1^2+2^2+3^2+4^2 \ldots 100^2 = 1+2^2+3^2 \ldots 100^2$

(c) $\sum_{j=1}^{n} j^2 = n^2 + \sum_{j=1}^{n-1} j^2$ T
$1^2+2^2+3^2+4^2 = 4^2+1^2+2^2+3^2$

(d) $\sum_{j=1}^{100} 2 = 200$ T
$2+2+2+2 \ldots$

(e) $\sum_{j=1}^{n} 3j^2 = 3\sum_{j=1}^{n} j^2$ T $3(1^2)+3(2^2)+3(3)^2+3(4)^2 = 3(1^2+2^2+3^2+4^2)$

(f) $\sum_{j=0}^{n}(j+1) = \sum_{j=1}^{n}(j+1)$ False

(g) $\sum_{j=0}^{n} j + 1 = \sum_{j=1}^{n} j + 1$ True $1^3+2^3+3^3 = 36$

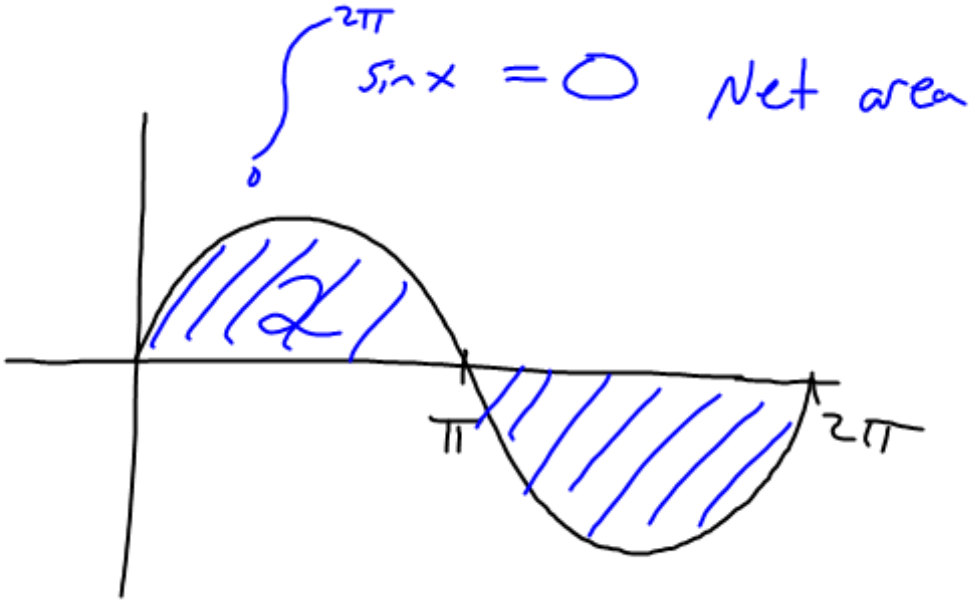
(h) $\sum_{j=1}^{10} j^3 = \left(\sum_{j=1}^{10} j\right)\left(\sum_{j=1}^{10} j^2\right)$ $6 \times 14 = 84$ False

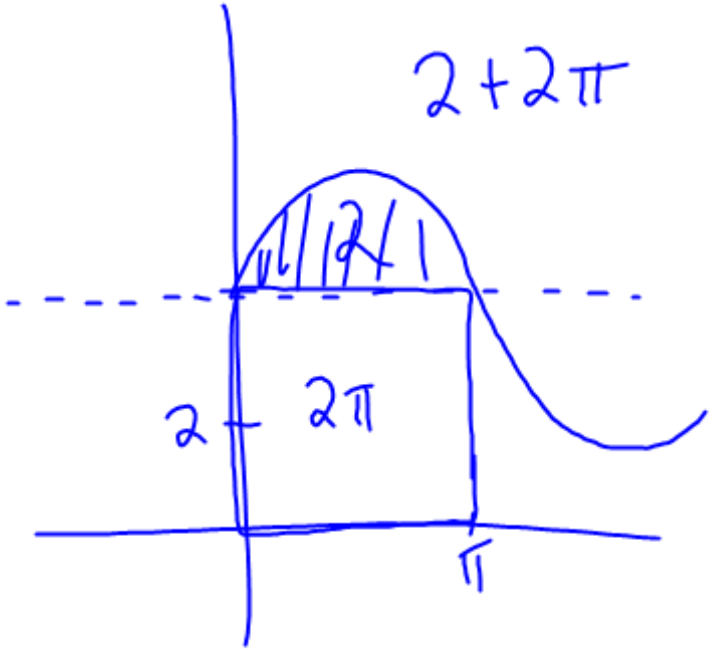
$$\lim_{n\to\infty} \sum_{k=1}^{n} f(c_k)\Delta x = \int_a^b f(x)\,dx.$$

$$\lim_{n\to\infty} \sum_{k=1}^{n} (3(m_k)^2 - 2m_k + 5)\,\Delta x = \int_{-1}^{3} (3x^2 - 2x + 5)\,dx.$$

on the interval $[-1, 3]$

Try exploration 1, p. 279

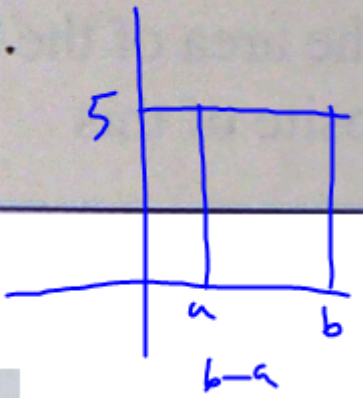




THEOREM 2 The Integral of a Constant

If $f(x) = c$, where c is a constant, on the interval $[a, b]$, then

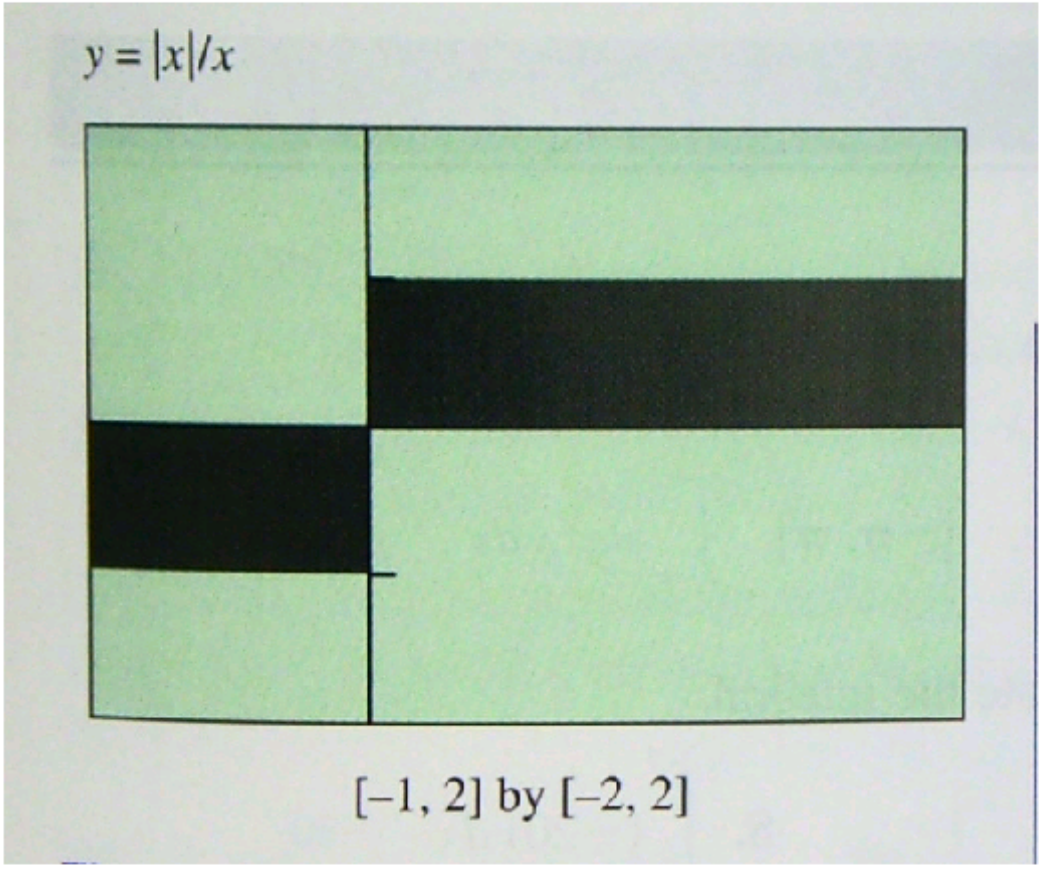
$$\int_a^b f(x)\,dx = \int_a^b c\,dx = c(b - a).$$



$$\int_a^b f(x)\,dx = \text{NINT}\,(f(x), x, a, b)$$

EXAMPLE 5 Integrating a Discontinuous Function

Find $\int_{-1}^{2} \frac{|x|}{x}\,dx.$



Try Expl. 2

HW

7-28 (3 from each chunk), 33-37, 39, 40